Raven Hill DISCOVERY CENTER

WHERE SCIENCE, HISTORY AND ART CONNECT

Shoebox Glider

Objective: to design and produce a glider that uses a shoebox as the fuselage or body of the glider.

The challenge is open-ended and involves collaborative and creative problem solving efforts! Work together and have fun!

Background:

Criteria are standards or requirements that the device must include. Examples of criteria are that the device must be efficient, must be able to land gently, and must be able to glide a certain distance.

Constraints are things that limit the design of the glider. Examples of constraints are money, time, maximum size, available materials, space to build or fly, and human capabilities.

Materials:

Shoebox

*Limited number of corrugated cardboard shoeboxes are available on request from Raven Hill.

Paper, cardboard, balsa wood, tape, etc. for creating a glider using the shoebox as the fuselage.

Procedure:

Rules or guidelines:

1. The glider must move forward for at least 3 meters.
2. The glider must not break upon landing.
3. The glider must include an intact shoebox in its design.
4. There are no material constraints.

At Home:

1. Suggestion! Research the dynamics of flight and apply them to your efforts.
2. Determine and gather the materials you will need for your glider.
3. Build your glider.

4. Determine how to launch the shoebox glider in a consistent way.
5. Obtain the most efficient glide slope ratio possible.
6. Begin background research
7. Gather materials
8. Design
9. Build your glider.
10. Test and then redesign and test again, if needed.
11. Be sure to put your name on your glider.
12. Bring your glider and demonstrate your understanding and success to NASA at Raven Hill's TEC Day on August 20, 2016

At Raven Hill:

1. Take your glider to the Shoebox Glider Station by the Outdoor Music Garden.
2. Give your glider to the Raven Hill volunteer.
3. Your glider will be given a number label.
4. Your glider number and name will be recorded on the Shoebox Glider chart.
5. Leave your glider at the Shoebox Glider Station to be taken up in the "cherry picker" for testing.

At Outdoor Music Garden 11 am.

Flight Testing

1. Stay behind the caution tape to watch the gliders being launched.
2. One glider will be launched and distance recorded, before another is launched.
3. Stay behind the caution tape until all gliders have been launched and distances recorded.
4. Gliders may be picked up at music garden AFTER the launch is all over.
5. Three best "flights" will be honored with a small prize.
6. Gliders must be picked up by the end of the day (4 pm). No gliders will be saved.

If you have questions, please feel free to call Cheri at **231-536-3369** or email cheri@ravenhilldiscoverycenter.org We look forward to seeing you at **TEC Day on Saturday, August 20, 2016**.